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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/999,766	07/23/97	MOSKOWITZ	S 2377/23

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LM02/0225

EXAMINER

MEISLAHN, D

ART UNIT	PAPER NUMBER
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2767

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DATE MAILED:

02/25/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/999,766

Applicant(s)
Moskowitz et al.

Examiner
Douglas Meislahn

Group Art Unit
2767



☒ Responsive to communication(s) filed on Dec 7, 1999

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 25-61 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 25-61 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment filed 07 December 1999 that provided a substitute specification and amended claims 25, 29, 33, 34, 36-49, and 51-61. The amendments have overcome the rejections based on 35 USC 112. Applicant is required to provide an amended copy of the specification. The references which were not cited are no longer with the parent case.

Response to Arguments

2. Applicant's arguments filed 07 December 1999 have been fully considered but they are not persuasive.

Applicant argues that Braudaway et al. do not teach encoding a digital watermark into a carrier signal. Lines 24-26 of column 7, which was cited in the previous office action, indicates that a watermark can be removed from watermarked information if the cipher key is present. Encoding the digital watermark into the image with the key is inherent. Applicant's carrier signal is information.

With respect to Schneier, the examiner considers decoding to be inherent because the watermark cannot accomplish its intended function without being removed from the data. A signature is part of a handwritten message, and thus the examiner considers a digital signature to be part of a message.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 43-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 43 and 44 recite the limitation "the sample window" in line 2. There is insufficient antecedent basis for this limitation in the claim. The examiner assumes that this is meant to read either "a sample window" or "the sample windows."

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

7. A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

8. Claims 25, 28, 29, 32, 33, 35, 38, and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Braudaway et al. (5530759).

Braudaway et al. talk about using a random or pseudo-random key in the process of putting a watermark into data in lines 21-26 of the seventh column.

Lines 56-57 of column one say that there are watermarks that identify copyright owners.

By watermarking the data, Braudaway et al.'s method creates a first derivative encoded signal. It is inherent that attempts to decode the watermark without the proper

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key would further obfuscate the information. It was once theorized that encrypting information with two keys in order to strengthen security could in fact be mimicked by using one key which would possibly be easier to break. Although this theory has since been proven incorrect, the immediate solution was to strengthen security by encrypting with a first key and then decrypting with a non-corresponding second key. Providing information is inherent.

In the abstract, Braudaway et al. say that certain pixels brightness are altered as a result of the watermark. This change in brightness anticipates claim 38's spectral values. Also in the abstract, Braudaway et al. talk about using only certain non-transparent values of the watermark. These non-transparent values form a map to meet claim 39.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 25, 29, 33, 35, 40-43, and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier (Applied Cryptography, 1994).

On page 67, Schneier talks about encrypting subliminal data into a message using a symmetric key. This is equivalent to encoding independent information into a signal. Official notice is taken that digital watermarks, which imperceptibly incorporate

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data about information into that information, are old and well-known as subliminal data used to authenticate documents. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to make the subliminal data of Schneier a digital watermark capable of authenticating information.

Chapter 10 of Schneier deals with the Digital Encryption Standard. DES uses an effectively 56-bit key. As described on pages 224-226, this key is broken down and permuted in the encryption of a block of data. This key breakdown and the subsequent permutations correspond to applicant's mask set. DES uses starting vectors and padding at the end of messages. These correspond to the start of message delimiter and number of bytes to follow the message of applicant's invention. DES uses 64-bit block encryption and divides the blocks into two 32-bit sections for encryption. This anticipates applicant's claims 42 and 47. Claims 43 and 48 are anticipated by DES' mixing of the two 32-bit blocks and the integration of the key. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to encrypt the key-encrypted watermark data of Schneier with DES because DES is an encryption standard.

11. Claims 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claims 25 and 29 above and further in view of Barton (5912972).

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. He does not say that the information includes a stream of digital

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samples. Barton's teaches embedding authentication information within a stream of digital data. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to authenticate digital sample streams as in Barton with the key-encrypted watermarks of Schneier.

12. Claims 27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claims 25 and 29 above.

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. He does not say that the information includes a continuous analog waveform. Official notice is taken that continuous analog waveforms are old and well-known. Since they can carry information, continuous analog waveforms sometimes need to be authenticated. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to authenticate continuous analog waveforms with the key-encrypted watermarks of Schneier.

13. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claim 33 above.

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. He does not say that the information is then modified. Encryption modifies data. Official notice is taken that encrypting information in order to protect the data from unauthorized viewing is old and well-known. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to protect the watermarked data of Schneier by encrypting it.

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14. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braudaway et al. or Schneier as applied to claim 29 above and further in view of Morris (5530751).

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. They do not say that one bit is read out of every sample for the watermark. In lines 50-52 of the third column, Morris says that the human ear cannot detect the difference between a sound value of 64000 and 64001. This would be a one-bit change of the least significant bit. As taught by Morris, these small changes can be used to carry identification codes. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to discretely carry the watermark information or Braudaway et al. or Schneier in the least significant bits as taught by Morris.

15. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claim 29 above, and further in view of Powell et al. (5930377).

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. They do not say that samples are mapped to extract bits of information. As is explained in their abstract and diagrams, Powell et al. teach a method of embedding a digital watermark which requires use of a map of an image to determine the places to embed the watermark. This method is advantageous because, as explained in lines 42-43 of column 1, it is resistant to image modification. Therefore

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it would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the mapping techniques of Powell to the encryption system of Schneier or Braudaway et al. so as to make the data's watermark resistant to data modification.

16. Claims 44, 45, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claims 43, 44, and 48 respectively above, and further in view of Cox et al. ("Secure Spread Spectrum Watermarking for Multimedia").

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. They do not say that the data is spectrally spread before insertion of the digital watermarked. In their abstract, Cox et al. talk about the advantages, which include versatility, difficulty of watermark removal, and robustness, of their system of spectrally spreading data, inserting the watermark, and then putting the watermarked data through an inverse spectral spread. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to reap the benefits of Cox et al.'s method in Schneier or Braudaway et al.'s system.

17. Claims 50-51 and 58-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied respectively to claims 41 and 48 above, and further in view of Barton (5912972).

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. They do not say that a digital signature or hash of the start of

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message delimiter is validated. In his second figure, Barton shows a digital signature being used as an authentication tool. Digital signatures are made so that they are unique to the article which they authenticate. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a digital signature, as taught by Barton, to verify the message sent by Schneier or Braudaway et al.

18. Claims 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claim 25 above and further in view of Barton (5912972).

Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. They do not say that each sample has unique watermark information. In lines 20-33 of column 4, Barton teaches including sequence data with the authentication data. The authentication data is a reduced representation of digital data. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to uniquely identify different samples so that the samples can be placed in the correct order. Unique watermarks could also deter cryptanalysis attacks.

Pre-processing sample windows is inherent, as is determining which and how many windows will contain watermark information.

19. Claims 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier or Braudaway et al. as applied to claim 55 above.

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Schneier and Braudaway et al. teach encrypting digital watermarks into information with a key. They do not say that the data that is watermarked is hashed and attached to itself. Official notice is taken that hashing data and then attaching the hash to the data is old and well-known. The hash acts as a verification. Digital signatures with message appendix are a common term implementation of this. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to attach a hash of the information to the information. This hash would be used to verify the integrity of the information.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sala et al. (5583488) display signatures being encoded into carrier signals.

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

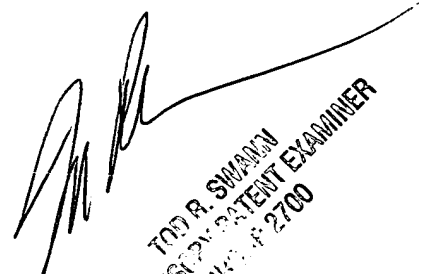
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas J Meislahn whose telephone number is (703) 305-1338. The examiner can normally be reached between 9AM - 6PM, except for every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tod Swann can be reached on (703) 308-7791. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-9051 for regular communications and (703) 308-9052 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Douglas J Meislahn
Examiner
Art Unit 2767

DJM
February 16, 2000



TOD R. SWANN
SUPERVISOR, PATENT EXAMINER
Art Unit 2700